LEARNING THE WAYS

Education

Reservation populations throughout the United States are on the rise. Some estimates place the natural population growth at three percent annually. With this growth comes the importance of education for the next generation.

Photovoltaics have been instrumental not only in producing power for tribes, but also in providing the power of knowledge. Several tribes have incorporated units about solar power into their elementary education curriculums. Other tribes have seen the value of renewable energy in their college and adult education programs. This is vital, as tribal colleges support important social change for their communities

U. S. Department of Energy grants have made some of these PV installations possible. Still others are the result of an impassioned belief among tribes that using the power of the sun is in harmony with their cultural beliefs and in educating the whole child.

▲ Photovoltaics atop the Jicarilla Apache School at Dulce, New Mexico. Not only does the solar array provide power for the school, it is also used for educational purposes: science classes learn more about PV and science fair projects are designed around it. *(Photo courtesy U.S. Department of Energy, Golden Field Office)*

AT SINTE GLESKA UNIVERSITY

▼ Spotted Tail (*Sinte Gleska* in the Lakota language), the leader of this clan in the late 1800s, wanted his people to learn about the 'white man's' ways while keeping their own ways. Vocational Education students at the university named for Spotted Tail carry on that tradition. *(Photo courtesy Center for Permaculture as Native Science)*

CATCHING THE DREAM

▼ Students at the Southwestern Indian Polytechnic Institute (SIPI) in Albuquerque, New Mexico, begin learning about solar energy at an early age, here with a Sun Catcher solar oven. *(Photo courtesy Sandia National Laboratories)*

▲ The Yurok tribe of Northern California uses PV for power at several buildings. Shown here is their Head Start array, which meets the electrical needs of that facility. *(Photo courtesy Sandia National Laboratories)*

▼ San Juan College, a comprehensive community college in New Mexico, with more than 30 percent Native American student body, embraces a renewable energy curriculum that includes PV – a mature, reliable technology that serves the students well when they return to their homes where conventional energy resources are frequently less than optimal. Depicted are students assembling and working with PV components. *(Photos courtesy San Juan College)*

San Juan College
One-Year Certificate Program

PHYS	111	*Introduction to Physics*	4	RENG	210	*Renewable Energy Apps*	3
INST	143	*Applied Basic Electronics*	6	RENG	220	*PV Theory/System Design*	4
INST	141	*National Electrical Code I*	3	RENG	230	*Electromechanical Devices*	3
INST	142	*National Electrical Code II*	3	RENG	240	*PV Installation and the NEC*	4
RENG	171	*AC and DC Machines*	4				
RENG	190	*Principles of Measurement*	4			*Total Credits for Certificate*	38

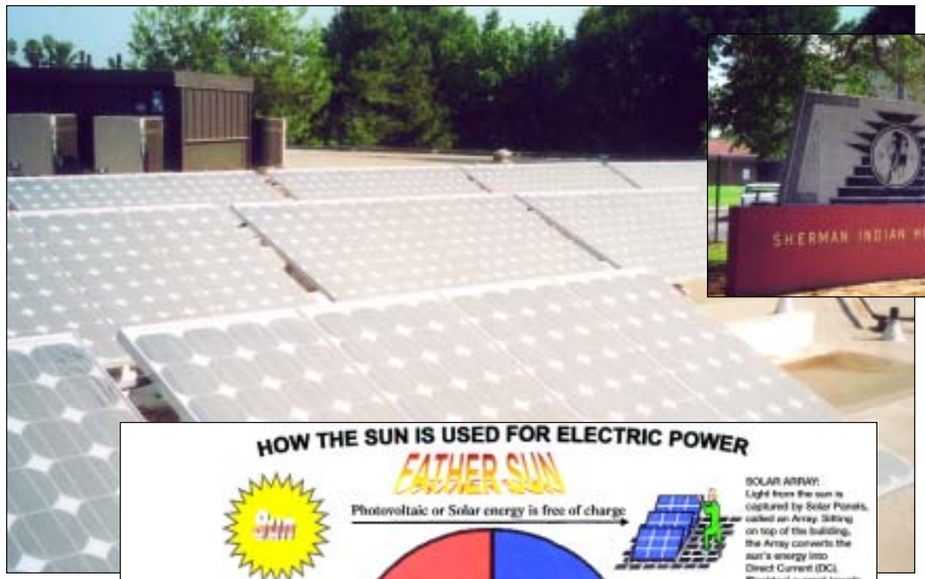
Southwestern Indian Polytechnic Institute, Albuquerque, New Mexico
The Advanced Renewable Energy Systems and Lab Coursework at SIPI

▲ The SIPI RE course is a part of a certificate program and has been developed to provide an in-depth study of the design, installation, maintenance, and applications of renewable energy systems, with emphasis on photovoltaics (PV) and wind. Power conditioning and storage, safety, troubleshooting, and remote monitoring are covered in detail. The course relies heavily on experiential learning techniques with on-site, portable and fixed renewable energy hardware. Upon completion, students will be familiar with design, installation and maintenance, and can choose a career in the solar industry or continue their education at a 4-year institution.

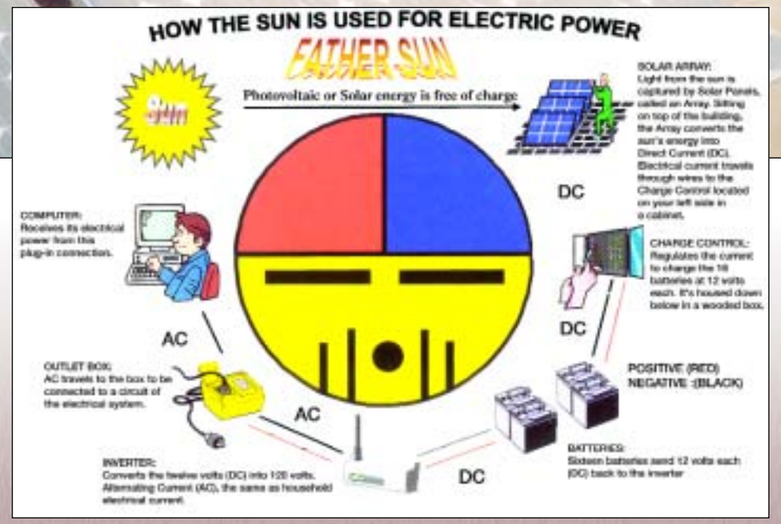
◀ The Seba Dalkai Boarding School (K-6) is a Bureau of Indian Affairs-operated reservation school for the Navajo Nation in northeastern Arizona. The photovoltaic system at the school serves as an outdoor classroom and a hands-on laboratory for training about PV. *(Photos courtesy Kiss + Cathcart, Architects)* ▼

Sherman Indian School

The largest U.S. Native American Boarding School, Riverside, California, is embarking on a major thrust to become more energy efficient. The project will include a PV system. In addition to generating renewable energy, it will provide a teaching tool for the high school's 600 students. *(Photos courtesy Sempra Energy Solutions)* ▼



▲ The Grand Traverse Band of Ottawa and Chippewa (northwestern lower peninsula of Michigan near the Great Lakes) is one of three tribes known as Three Fires. This PV/wind hybrid powers a satellite education office and will provide future power for computers in the education program. *(Photo courtesy Grand Traverse Band)*



▲ Zuni is considered a traditional pueblo. The *"Middle Place of the World"* teaches children about Father Sun. *(Poster courtesy Zuni Conservation Project)*